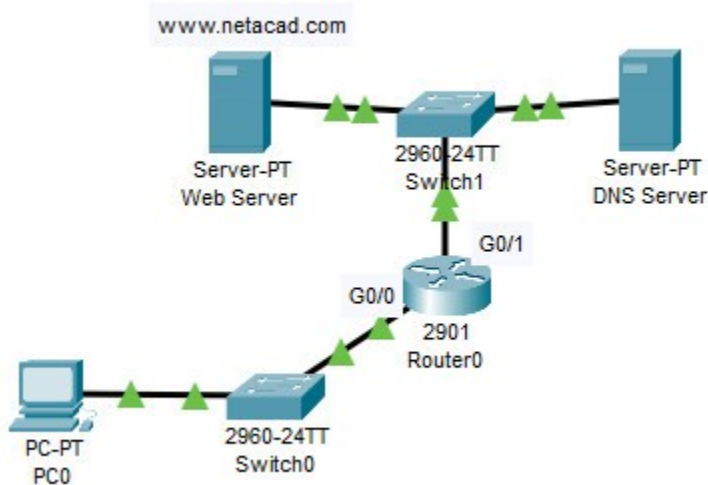


CCNA 2 v7 Modules 7 – 9: Available and Reliable Networks Exam Answers

Question 1

36.Open the PT Activity. Perform the tasks in the activity instructions and then answer the question.



What is the keyword that is displayed on www.netacad.com?

- DHCP
- switch
- **Router**
- networking
- Cisco
- IPv6

Explanation: In order for the host to receive the address of the DNS server, the host must use stateless DHCPv6. The router is configured with the correct DHCPv6 pool, but is missing the command `ipv6 nd other-config-flag` that signals to the host that it should use DHCPv6 to get additional address information. This command should be added to the interface Gigabit0/0 configuration on the router.

Question 2

35. Which statement describes HSRP?

- **It is used within a group of routers for selecting an active device and a standby device to provide gateway services to a LAN.**
- It uses ICMP to allow IPv4 hosts to locate routers that provide IPv4 connectivity to remote IP networks.
- If the virtual router master fails, one router is elected as the virtual router master with the other routers acting as backups.
- It is an open standard protocol.

Explanation: It is VRRP that elects one router as the virtual router master, with the other routers acting as backups in case the virtual router master fails. HSRP is a Cisco-proprietary protocol. IRDP uses ICMP messages to allow IPv4 hosts to locate routers that provide IPv4 connectivity to other (nonlocal) IP networks. HSRP selects active and standby routers to provide gateway services to hosts on a LAN.

Question 3

34. After a host has generated an IPv6 address by using the DHCPv6 or SLAAC process, how does the host verify that the address is unique and therefore usable?

- The host sends an ICMPv6 echo request message to the DHCPv6 or SLAAC-learned address and if no reply is returned, the address is considered unique.
- **The host sends an ICMPv6 neighbor solicitation message to the DHCP or SLAAC-learned address and if no neighbor advertisement is returned, the address is considered unique.**

- The host checks the local neighbor cache for the learned address and if the address is not cached, it is considered unique.
- The host sends an ARP broadcast to the local link and if no hosts send a reply, the address is considered unique.

Explanation: Before a host can actually configure and use an IPv6 address learned through SLAAC or DHCP, the host must verify that no other host is already using that address. To verify that the address is indeed unique, the host sends an ICMPv6 neighbor solicitation to the address. If no neighbor advertisement is returned, the host considers the address to be unique and configures it on the interface.

Question 4

42. Match the DHCP message types to the order of the DHCPv4 process.

Step 1	HCPDISCOVER
Step 2	HCPOFFER
Step 3	HCPREQUEST
Step 4	HCPACK

Question 5

16. A client device on an Ethernet segment needs an IP address in order to communicate on the network. A DHCP server with IP address 192.168.1.1 has been configured and enabled on the network. How will a client device obtain a usable IP address for this network?

- Send a DHCPACK packet to the default gateway address.
- Use a statically configured IP address from the pool of IP addresses that is offered by the DHCP server.

- **Send a DHCPDISCOVER message to physical address FF-FF-FF-FF-FF-FF.**
- Send a DHCPREQUEST packet to IP address 255.255.255.255.

Explanation: Like IP addressing, there is also a special MAC address for broadcast purposes: FF-FF-FF-FF-FF-FF. When a DHCP client needs to send a DHCP Discover message in order to seek DHCP servers, the client will use this MAC address as the destination MAC address in the Ethernet frame. It does this because it has no knowledge of the IP and MAC addresses of DHCP servers.

Question 6

38. Match the purpose with its DHCP message type.

DHCPDISCOVER -- a message that is used (by a client (computer)) to identify any available DHCP servers on a network

DHCPOFFER -- a message that is used (by a server (computer)) to suggest a lease to a client

DHCPREQUEST -- a message that is used (by a client (computer)) to identify the explicit server and lease offer to accept

DHCPACK -- a message that is used (by a server (computer)) to acknowledge that the lease is successful

Question 7

48. What is the result of a network technician issuing the command `ip dhcp excluded-address 10.0.15.1 10.0.15.15` on a Cisco router?

- The Cisco router will exclude only the 10.0.15.1 and 10.0.15.15 IP addresses from being leased to DHCP clients.
- **The Cisco router will exclude 15 IP addresses from being leased to DHCP clients.**

- The Cisco router will automatically create a DHCP pool using a /28 mask.
- The Cisco router will allow only the specified IP addresses to be leased to clients.

Explanation: The **ip dhcp excluded-address** command is followed by the first and the last addresses to be excluded from being leased to DHCP clients.

Question 8

53. What is a result when the DHCP servers are not operational in a network?

- Workstations are assigned with the IP address 127.0.0.1.
- Workstations are assigned with IP addresses in the 10.0.0.0/8 network.
- **Workstations are assigned with IP addresses in the 169.254.0.0/16 network.**
- Workstations are assigned with the IP address 0.0.0.0.

Explanation: When workstations are configured with obtaining IP address automatically but DHCP servers are not available to respond to the requests, a workstation can assign itself an IP addresses from the 169.254.0.0/16 network.

Question 9

37. Match each DHCP message type with its description.

Explanation: Place the options in the following order:

DHCPDISCOVER – a client initiating a message to find a DHCP server

DHCPOFFER – a DHCP server responding to the initial request by a client

DHCPREQUEST – the client accepting the IP address provided by the DHCP server

DHCPACK – the DHCP server confirming that the lease has been accepted

Question 10

14. A small coffee shop is offering free Wi-Fi to customers. The network includes a wireless router and a DSL modem that is connected to the local phone company. What method is typically used to configure the connection to the phone company?

- **Set the WAN connection in the wireless router as a DHCP client.**
- Set the connection between the wireless router and the DSL modem as a private IP network.
- Set the DSL modem as a DHCP client to get a public IP address from the wireless router.
- Set the DSL modem as a DHCP client to the phone company and a DHCP server for the internal connection.

Explanation: In a SOHO environment, a wireless router connects to an ISP via a DSL or cable modem. The IP address between the wireless router and ISP site is typically assigned by the ISP through DHCP. The DSL modem does not manage IP address allocation

Question 11

52. Which set of commands will configure a router as a DHCP server that will assign IPv4 addresses to the 192.168.100.0/23 LAN while reserving the first 10 and the last addresses for static assignment?

```
ip dhcp excluded-address 192.168.100.1 192.168.100.9  
ip dhcp excluded-address 192.168.101.254
```

```
ip dhcp pool LAN-POOL-100
ip network 192.168.100.0 255.255.254.0
ip default-gateway 192.168.100.1
```

```
dhcp pool LAN-POOL-100
ip dhcp excluded-address 192.168.100.1 192.168.100.9
ip dhcp excluded-address 192.168.100.254
network 192.168.100.0 255.255.254.0
default-router 192.168.101.1
```

```
ip dhcp excluded-address 192.168.100.1 192.168.100.10
ip dhcp excluded-address 192.168.100.254
ip dhcp pool LAN-POOL-100
network 192.168.100.0 255.255.255.0
ip default-gateway 192.168.100.1
```

```
ip dhcp excluded-address 192.168.100.1
192.168.100.10
ip dhcp excluded-address 192.168.101.254
ip dhcp pool LAN-POOL-100
network 192.168.100.0 255.255.254.0
default-router 192.168.100.1
```

Explanation: The /23 prefix is equivalent to a network mask of 255.255.254.0. The network usable IPv4 address range is 192.168.100.1 to 192.168.101.254 inclusive. The commands dhcp pool, ip default-gateway, and ip network are not valid DHCP configuration commands.

Question 12

9. Which command, when issued in the interface configuration mode of a router, enables the interface to acquire an IPv4 address automatically from an ISP, when that link to the ISP is enabled?

- service dhcp
- **ip address dhcp**
- ip helper-address

- ip dhcp pool

Explanation: The ip address dhcp interface configuration command configures an Ethernet interface as a DHCP client. The service dhcp global configuration command enables the DHCPv4 server process on the router. The ip helper-address command is issued to enable DHCP relay on the router. The ip dhcp pool command creates the name of a pool of addresses that the server can assign to hosts.

Question 13

45. Which command will allow a network administrator to check the IP address that is assigned to a particular MAC address?

- Router# show running-config I section_dhcp
- Router# show ip dhcp server statistics
- **Router# show ip dhcp binding**
- Router# show ip dhcp pool

Explanation: The **show ip dhcp binding** command will show the leases, including IP addresses, MAC addresses, lease expiration, type of lease, client ID, and user name.

Question 14

15. A company uses DHCP to manage IP address deployment for employee workstations. The IT department deploys multiple DHCP servers in the data center and uses DHCP relay agents to facilitate the DHCP requests from workstations. Which two UDP ports are used to forward DHCP traffic? (Choose two.)

- 23
- 53
- 67
- **68**
- 80

Explanation: The DHCP protocol operates with 2 UDP ports. UDP port 67 is the destination port for DHCP servers, and DHCP clients use UDP port 68.

Question 15

47. What information can be verified through the show ip dhcp binding command?

- **the IPv4 addresses that are assigned to hosts by the DHCP server**
- that DHCPv4 discover messages are still being received by the DHCP server
- the IPv4 addresses that have been excluded from the DHCPv4 pool
- the number of IP addresses remaining in the DHCP pool

Explanation: The **show ip dhcp binding** command shows a list of IPv4 addresses and the MAC addresses of the hosts to which they are assigned. Using this information an administrator can determine which host interfaces have been assigned to specific hosts.

Question 16

46. What is the reason that an ISP commonly assigns a DHCP address to a wireless router in a SOHO environment?

- better network performance
- better connectivity
- **easy IP address management**
- easy configuration on ISP firewall

Explanation: In a SOHO environment, a wireless router connects to the ISP via a DSL or cable modem. The IP address between the wireless router and ISP site is typically

assigned by the ISP through DHCP. This method facilitates the IP addressing management in that IP addresses for clients are dynamically assigned so that if a client is dropped, the assigned IP address can be easily reassigned to another client.

Question 17

11. A host PC is attempting to lease an address through DHCP. What message is sent by the server to let the client know it is able to use the provided IP information?

- DHCPDISCOVER
- DHCPOFFER
- DHCPREQUEST
- **DHCPACK**
- DHCPNACK

Explanation: When a host uses DHCP to automatically configure an IP address, the typically sends two messages: the DHCPDISCOVER message and the DHCPREQUEST message. These two messages are usually sent as broadcasts to ensure that all DHCP servers receive them. The servers respond to these messages using DHCPOFFER, DHCPACK, and DHCPNACK messages, depending on the circumstance.

Question 18

6. Which protocol automates assignment of IP addresses on a network, and which port number does it use? (Choose two.)

- **DHCP**
- DNS
- SMB
- 53
- **67**

- 80

Explanation: DNS uses port 53 and translates URLs to IP addresses. SMB provides shared access to files and printers and uses port 445. Port 80 is used by HTTP. HTTP is a protocol used to communicate between a web browser and a server.

Question 19

13. Which DHCPv4 message will a client send to accept an IPv4 address that is offered by a DHCP server?

- broadcast DHCPACK
- **broadcast DHCPREQUEST**
- unicast DHCPACK
- unicast DHCPREQUEST

Explanation: When a DHCP client receives DHCPOFFER messages, it will send a broadcast DHCPREQUEST message for two purposes. First, it indicates to the offering DHCP server that it would like to accept the offer and bind the IP address. Second, it notifies any other responding DHCP servers that their offers are declined.

Question 20

22. Refer to the exhibit. A network administrator is implementing the stateless DHCPv6 operation for the company. Clients are configuring IPv6 addresses as expected. However, the clients are not getting the DNS server address and the domain name information configured in the DHCP pool. What could be the cause of the problem?

```

R1# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)# ipv6 unicast-routing
R1(config)# ipv6 dhcp pool ACAD_NET
R1(config-dhcp)# dns-server 2001:db8:acad:a1::10
R1(config-dhcp)# domain-name netacad.net
R1(config-dhcp)# exit
R1(config)# interface gigabitEthernet 0/0
R1(config-if)# ipv6 address 2001:db8:acad:1::1/64
R1(config-if)# ipv6 dhcp server ACAD_NET
R1(config-if)# end
R1#

R1# show ipv6 dhcp pool
DHCPv6 pool: ACAD_NET
  DNS server: 2001:DB8:ACAD:A1::10
  Domain name: netacad.net
  Active clients: 0
R1#

```

- The DNS server address is not on the same network as the clients are on.
- **The router is configured for SLAAC operation.**
- The GigabitEthernet interface is not activated.
- The clients cannot communicate with the DHCPv6 server, evidenced by the number of active clients being 0.

Explanation: The router is configured for SLAAC operation because there is no configuration command to change the RA M and O flag value. By default, both M and O flags are set to 0. In order to permit stateless DHCPv6 operation, the interface command `ipv6 nd other-config-flag` should be issued. The GigabitEthernet interface is in working condition because clients can get RA messages and configure their IPv6 addresses as expected. Also, the fact that R1 is the DHCPv6 server and clients are getting RA messages indicates that clients can communicate with the DHCP server. The number of active clients is 0 because the DHCPv6 server does not maintain the state of clients IPv6 addresses (it is not configured for stateful DHCPv6 operation). The DNS server address issue is not relevant to the problem.

Question 21

50. Refer to the exhibit. Based on the output that is shown, what kind of IPv6 addressing is being configured?

```
R1# show running-config
<output omitted>
!
ipv6 dhcp pool IPV6
  dns-server 2001:DB8:1234:5678::100
  domain-name netacad.com
!
interface FastEthernet0/0
  <output omitted>
!
  ipv6 nd other-config-flag
  ipv6 dhcp server IPV6
!
<output omitted>
```

- **stateless DHCPv6**
- SLAAC
- static link-local
- stateful DHCPv6

Explanation: Stateful DHCPv6 pools are configured with address prefixes for hosts via the **address** command, whereas stateless DHCPv6 pools typically only contain information such as DNS server addresses and the domain name. RA messages that are sent from routers that are configured as stateful DHCPv6 servers have the M flag set to 1 with the **command ipv6 nd managed-config-flag**, whereas stateless DHCPv6 servers are indicated by setting the O flag to 1 with the **ipv6 nd other-config-flag** command.

Question 22

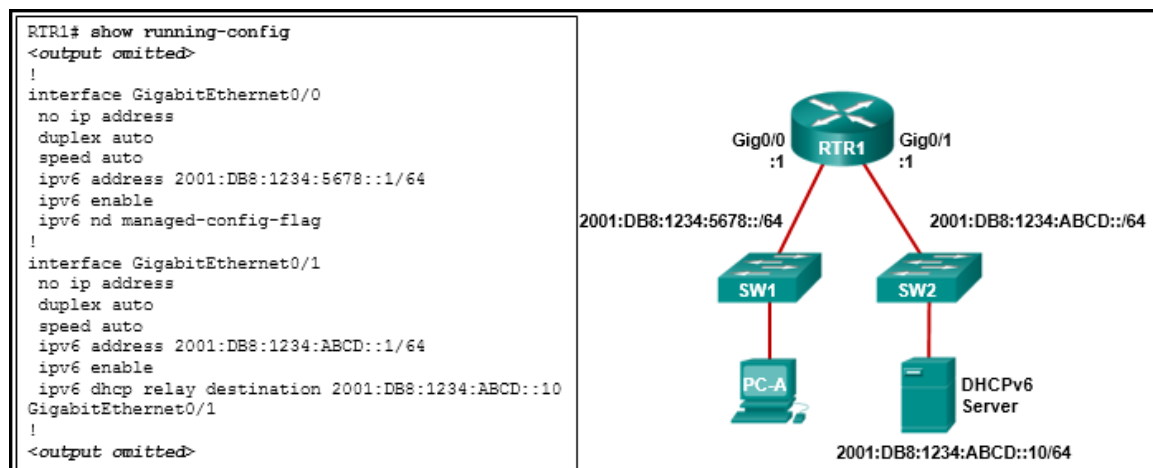
24. A company uses the SLAAC method to configure IPv6 addresses for the employee workstations. Which address will a client use as its default gateway?

- the global unicast address of the router interface that is attached to the network
- the unique local address of the router interface that is attached to the network
- the all-routers multicast address
- **the link-local address of the router interface that is attached to the network**

Explanation: When a PC is configured to use the SLAAC method for configuring IPv6 addresses, it will use the prefix and prefix-length information that is contained in the RA message, combined with a 64-bit interface ID (obtained by using the EUI-64 process or by using a random number that is generated by the client operating system), to form an IPv6 address. It uses the link-local address of the router interface that is attached to the LAN segment as its IPv6 default gateway address.

Question 23

56. Refer to the exhibit. PC-A is unable to receive an IPv6 address from the stateful DHCPv6 server. What is the problem?



- **The `ipv6 dhcp relay` command should be applied to interface Gig0/0.**
- The `ipv6 nd managed-config-flag` should be applied to interface Gig0/1.
- The `ipv6 dhcp relay` command should use the link-local address of the DHCP server.
- The `ipv6 nd managed-config-flag` command should be `ipv6 nd other-config-flag`.

Explanation: The `ipv6 dhcp relay` command must be applied to the interface where the clients are located. The `ipv6 dhcp relay` command can use either the link-local or global unicast address of the DHCPv6 server, or even a multicast address. The `ipv6 nd managed-config-flag` indicates to the clients that they should use stateful DHCPv6 and is also applied to the interface where the clients are located.

Question 24

57. Refer to the exhibit. A network administrator is configuring a router as a DHCPv6 server. The administrator issues a `show ipv6 dhcp pool` command to verify the configuration. Which statement explains the reason that the number of active clients is 0?

```

R1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)# ipv6 unicast-routing
R1(config)# ipv6 dhcp pool ACAD_CLASS
R1(config-dhcp)# dns-server 2001:db8:acad:a1::10
R1(config-dhcp)# domain-name netacad.net
R1(config-dhcp)# exit
R1(config)# interface gigabitEthernet 0/0
R1(config-if)# ipv6 address 2001:db8:acad:1::1/64
R1(config-if)# ipv6 dhcp server ACAD_CLASS
R1(config-if)# ipv6 nd other-config-flag
R1(config-if)# end
R1#
ITExamAnswers.net
R1# show ipv6 dhcp pool
DHCPv6 pool: ACAD_CLASS
  DNS server: 2001:DB8:ACAD:A1::10
  Domain name: netacad.net
  Active clients: 0
R1#

```

- The default gateway address is not provided in the pool.
- No clients have communicated with the DHCPv6 server yet.
- The IPv6 DHCP pool configuration has no IPv6 address range specified.
- **The state is not maintained by the DHCPv6 server under stateless DHCPv6 operation.**

Explanation: Under the stateless DHCPv6 configuration, indicated by the command **ipv6 nd other-config-flag**, the DHCPv6 server does not maintain the state information, because client IPv6 addresses are not managed by the DHCP server. Because the clients will configure their IPv6 addresses by combining the prefix/prefix-length and a self-generated interface ID, the ipv6 dhcp pool configuration does not need to specify the valid IPv6 address range. And because clients will use the link-local address of the router interface as the default gateway address, the default gateway address is not necessary.

Question 25

49. Match the descriptions to the corresponding DHCPv6 server type.

Enabled in RA messages with the **ipv6 nd other-config-flag** command -- Stateless DHCPv6

Clients send only DHCPv6 INFORMATION-REQUEST messages to the server -- Stateless DHCPv6

Enabled on the client with the **ipv6 address autoconfig** command -- Stateless DHCPv6

The M flag is set to 1 in RA messages -- Stateful DHCPv6

Uses the **address** command to create a pool of addresses for clients -- Stateful DHCPv6

Enabled on the client with the **ipv6 address dhcp** command -- Stateful DHCPv6

Question 26

26. A network administrator is analyzing the features that are supported by different first-hop router redundancy protocols. Which statement describes a feature that is associated with HSRP?

- **HSRP uses active and standby routers.**
- HSRP is nonproprietary.
- It allows load balancing between a group of redundant routers.
- It uses ICMP messages in order to assign the default gateway to hosts.

Explanation: The HSRP first-hop router redundancy protocol is Cisco proprietary and supports standby and active devices. VRRPv2 and VRRPv3 are nonproprietary.

GLBP is Cisco proprietary and supports load balancing between a group of redundant routers.

Question 27

40. Match the step number to the sequence of stages that occur during the HSRP failover process.

- Step 1 The forwarding router fails.
- Step 2 The standby router stops seeing hello messages from the forwarding router.
- Step 3 The standby router assumes the role of the forwarding router.
- Step 4 The new forwarding router assumes both the IP and MAC addresses of the virtual router.

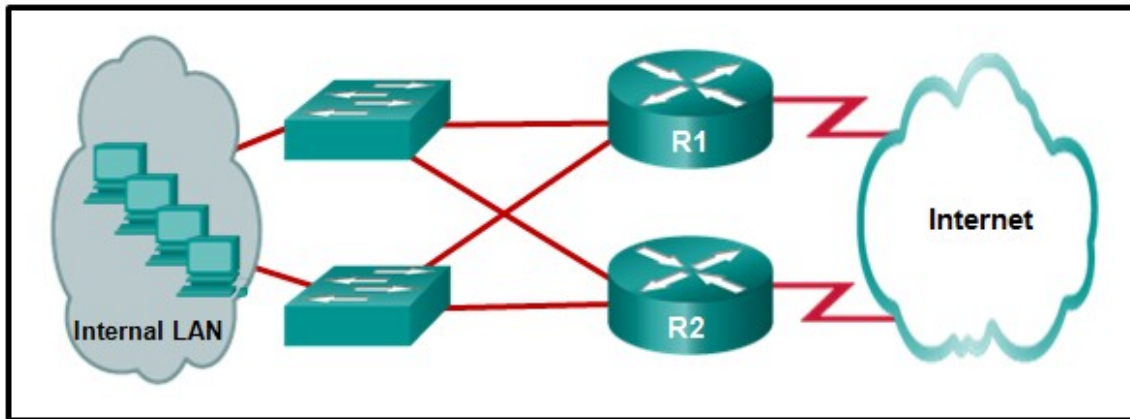
Question 28

41. Match the FHRP protocols to the appropriate description.

- HSRP Cisco proprietary FHRP that provides redundancy through use of an active device and standby device
- VRRP An open standard FHRP that provides redundancy through use of a virtual routers master and one or more backups
- GLBP Cisco proprietary FHRP that provides load sharing in addition to redundancy

Question 29

27. Refer to the exhibit. What protocol can be configured on gateway routers R1 and R2 that will allow traffic from the internal LAN to be load balanced across the two gateways to the Internet?

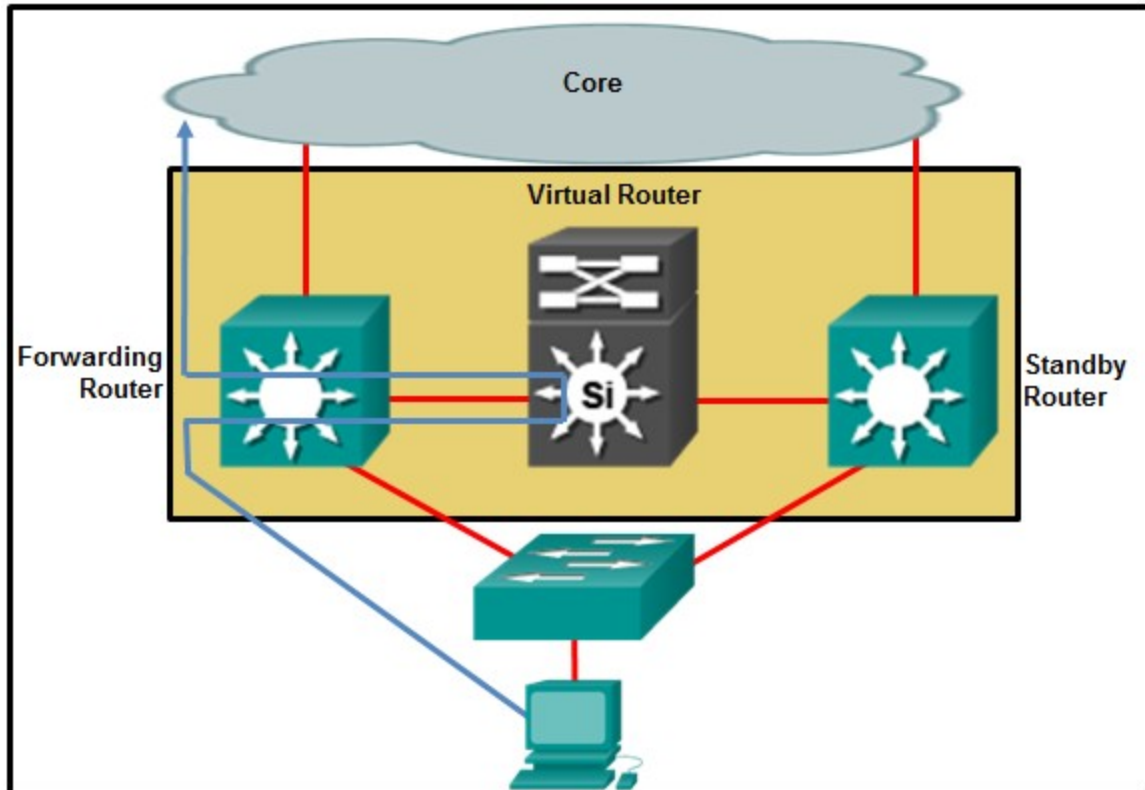


- **GLBP**
- PVST+
- PVST
- STP

Explanation: GLBP, or Group Load Balancing Protocol, allows multiple routers to act as a single default gateway for hosts. GLBP load balances the traffic across the individual routers on a per host basis.

Question 30

29. Refer to the exhibit. Which destination MAC address is used when frames are sent from the workstation to the default gateway?



- **MAC address of the virtual router**
- MAC address of the standby router
- MAC addresses of both the forwarding and standby routers
- MAC address of the forwarding router

Explanation: The IP address of the virtual router acts as the default gateway for all the workstations. Therefore, the MAC address that is returned by the Address Resolution Protocol to the workstation will be the MAC address of the virtual router.

Question 31

28. Refer to the exhibit. A network engineer is troubleshooting host connectivity on a LAN that uses a first hop redundancy protocol. Which IPv4 gateway address should be configured on the host?

```
FastEthernet0/1 - Group 1
State is Active
  1 state change, last state change 00:02:34
Virtual IP address is 192.168.2.100
Hello time 3 sec, hold time 10 sec
  Next hello sent in 0.288 secs
Redirect time 600 sec, forwarder timeout 14400 sec
Preemption disabled
Active is local
Standby is 192.168.2.2, priority 100 (expires in 8.640 sec)
Priority 100 (default)
Weighting 100 (default 100), thresholds: lower 1, upper 100
Load balancing: round-robin
Group members:
  001e.7aa3.5e71 (192.168.2.1) local
  001e.7aa3.5f31 (192.168.2.2)
There are 2 forwarders (1 active)
Forwarder 1
  State is Active
    1 state change, last state change 00:02:23
  MAC address is 0007.b400.0101 (default)
  Owner ID is 001e.7aa3.5e71
  Redirection enabled
```

- 192.168.2.0
- 192.168.2.1
- 192.168.2.2
- **192.168.2.100**

Explanation: The host default gateway address should be the FHRP (in this case GLBP) virtual IP address.

Question 32

59. Which FHRP implementation is a nonproprietary IPv4-only election protocol which has one master router per group?

- HSRP for IPv6
- GLBP
- **VRRPv2**
- VRRPv3

Explanation: ?

Question 33

66. The address pool of a DHCP server is configured with 10.19.44.0/24. The network administrator reserves 3 IP addresses for servers. How many IP addresses are left in the pool to be assigned to other hosts?

- 255
- 252
- 241
- **251**
- 249

Explanation: ?

100%

You have scored **100%**.

Congratulations, you have passed the exam.

You have used 1 of 1 attempt(s).

Review Assessment

Here is how you performed in each of the Learning Objectives and Skills associated with this assessment.

Network Services. DHCPv4. Addressing
100%
IP Addressing. IPv6. DHCPv6
100%
Routing. Redundancy. FHRP
100%